

Genetic Parameter prediction of Growth Traits in Kurdi Sheep, Using Random Regression Model

Abstract

In this study, a total of 22887 BW records of Kurdi lambs, obtained from 6599 animals, between 1 and 365 d of age, collected during 1990 to 2007 at Kurdi rearing and breeding station in Shirvan were used. The model used for analyzing data include the impacts of fixed effects (date of birth, sex of lamb, type of lamb's delivery and age of dam and lamb) additive genetic effect, maternal genetic effect, permanent environmental effect and residual effect. The observation of random regression models' data with order fitnesses of 2 to 6 were pigeonholed additive genetic effect, maternal genetic effect and permanent environmental effect. Results indicated that the 6th order was more appropriate than others. The value of direct heritability with this model for lamb body weight at birth, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 month of age were estimated as 0.06, 0.27, 0.31, 0.35, 0.35, 0.33, 0.30, 0.28, 0.27, 0.28, 0.29 and 0.28 respectively. The value of maternal heritability with this model for lamb body weight at birth, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 month of age were estimated as 0.24, 0.03, 0.06, 0.09, 0.10, 0.12, 0.13, 0.12, 0.11, 0.10, 0.10 and 0.08 respectively. The proportion of permanent environmental variance to phenotypic variance was from 0.05 for birth weight to 0.69 for weight at 2 months of age, then decreased until 5 months of age and then increased. Direct genetic correlations between body weight measurements in different ages were positive and were from 0.16 to 0.99, and at closer ages were higher. Maternal genetic correlations were positive too and were from 0.25 to 1. In general the results depicted that lamb body weights are frequently affected by different factors (additive genetic, maternal genetic and permanent environment), and due to variability of heritability coefficient for lamb body weight from birth to 12 months of age, it could be concluded that some different genes might be affect lamb body weight at birth to 12 months of age.

Key words: Genetic parameters, Body weight, Random regression model, Kurdi lambs.



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